

New Operation for E-20TP-E Supplementary Manual

This manual explains function of Automatic Mode Teaching and Transfer Function in Off-line Mode.

1. Addition of Automatic Mode Teaching



Automatic mode teaching is available in the following units and versions.

- FX(E)-20GM : Ver. 3.10 or more
- E-20TP-E : Ver. 1.20 or more

1.1 Introduction

In the conventional version, teaching in the two-axis positioning unit FX(E)-20GM was available in the manual mode exclusively. In the following versions, teaching is available in the automatic mode also.

Teaching performed in the automatic mode is called “automatic mode teaching”.

1.2 Setting for Automatic Mode Teaching

When using automatic mode teaching, a special auxiliary relay M9161 in the positioning unit is required to be set to ON.

1.2.1 Set M9161 to ON

M9161 can be set to ON by “Monitor > Device Monitor > Test > Forced SET” in the E-20TP. In the usual procedure, however, write “SET M9161” in the top line of a subtask (O100). The line “SET M9161” is not required to be deleted even after the teaching work is completed.

1) Example program 1 (when a subtask (O100) is not present currently)

```
N0 O100,N0;
N0 SET M9161;
N1 m102;
```

2) Example program 2 (when a subtask is present currently and loop is not performed)

```
N0 O100,N0;
N0 SET M9161;
N1 .....
N2 .....
N3 m102;
```

←Insert it after the line for declaration of O100.

} Conventional subtask program

3) Program example 3 (when a subtask is present currently and loop is performed)

```
N0 O100,N0;
N0 SET M9161;
N1 P0;
N2 .....
N3 .....
N4 JAMP(FNC04) P0;
N5 m102;
```

←Insert it after the line for declaration of O100.

} Conventional subtask program



1.3 Operation of Teaching Panel E-20TP

1.3.1 Use automatic mode teaching mode

In the E-20TP, automatic mode teaching becomes valid when the following procedure is performed while M9161 is set to ON.

In the automatic mode, press the following keys.

MNT/ TEST

 →

2

 (Test) →

5

 (Teaching)

At this time, in automatic mode teaching, set M9000 and M9016 to ON and select the Single Run mode.

In the conventional version, when the teaching mode was selected, the program (teaching screen) was displayed.

In automatic mode teaching, the operation monitor screen is displayed.

1.3.2 Remote Program start / stop

In automatic mode teaching, program start/stop commands can be given from the E-20TP. (Because the Single Run mode is selected, one line only is executed when one start command is given.)

The program start/stop keys are assigned as follows.

<table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>NOP 4</td></tr> </table> :X-axis remote start	NOP 4	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>Oy/N 7</td></tr> </table> :X-axis remote stop	Oy/N 7
NOP 4			
Oy/N 7			
<table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>cod 0</td></tr> </table> :Y-axis remote start	cod 0	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>r 3</td></tr> </table> :Y-axis remote stop	r 3
cod 0			
r 3			

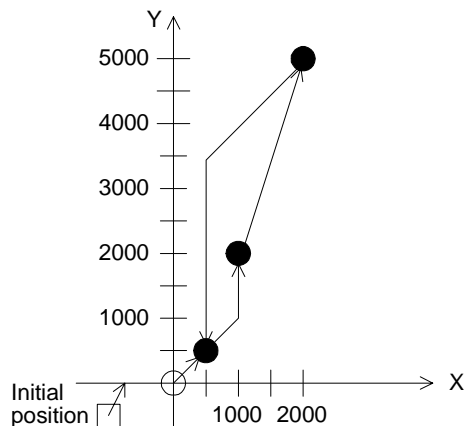
1.3.3 Teaching procedure

Actual operation examples are picked up in the explanation below.

Positioning example program

```

O0,N0;
N0  cod28(DRVZ);
N1  cod90(ABS);
N2  cod00(DRV)   x500   y500;
N3  cod29(SETR);
N4  cod04(TIME)  K200;
N5  cod00(DRV)   x1000  y2000;
N6  cod04(TIME)  K200;
N7  cod01(LIN)   x2000  y5000;
N8  cod04(TIME)  K200;
N9  cod30(DRVR);
N10 m02(END)
  
```



subtask example program

```
O100,N1000
N1000 SET M9161;
N1001 P100;
N1002 LD X000
N1003 FNC90(OUT) Y000;
N1004 JMP P100;
N1005 m102(END);
```

- 1) Write a program to the positioning unit. Select the automatic mode.
- 2) Select teaching.

MNT/TEST → 2 → 5

Test
 3. Feed
 4. Jog
 ■ 5. Teaching

- 3) Set M9000 and M9016 to ON, and select the single Run mode.

M9000, M9016 ON
 and Single Run?
 Yes [GO] No [CLR]

GO
 ;

: Teaching becomes enabled when the Single Run mode is selected.

- 4) Issue a start command from the E-20TP to execute the program.

T
 x, y Ready
 x 0
 y 0

NOP
 4

: Program start
 (Change over to program screen)

NOP
 4

: Program start



5) The command being executed and the current value are displayed.

```

T O0  N0
  cod28 (DRVZ)
x -30323
y -32200
  
```

NOP
4 : Program start

```

T O0  N1
  cod90 (ABS)
x 0
y 0
  
```

NOP
4 : Program start

6) When teaching is to be performed for a positioning address which has been already executed, perform the steps (6-a) and (7) shown below.

When teaching is to be performed for a positioning address which has not been executed yet, perform the steps (6-b) and (7) shown below.

6-a) Teaching for address already executed

Execute a command for which teaching is to be performed. Perform positioning using the address data in the current program.

```

T O0  N2
  cod00 (DRV)
x 0
y 0
  
```

NOP
4 : Program start

“cod00”, “x500” and “y500” are executed, and the program is waiting for a next command. At this time, when you would like to change the positioning address x500 or y500 which has been already executed, press the following key.

```

T O0  N2
  cod29 (STER)
x 500
y 500
  
```

CLEAR : The monitor screen is changed over to the teaching screen. The screen shown in the step 7 is displayed.

6-b) Teaching for address not executed yet

Execute the program in the Single Run mode just before the position for teaching.

When the motor is stopped, press the **STEP** key. The monitor screen is changed over to the teaching screen.

```
T O0   N2
  cod00 (DRV)
  x  0
  y  0
```

STEP : The monitor screen is changed over to the teaching screen.

7) Move the cursor to the X-axis address data, and perform jog operation.

```
T S8   N2
  cod00 (DRV)
  ▶ x  500
  y  500;
```

↓ : Move the cursor to the address data.

8) Stop the program in the position for teaching. Update the program.

```
T S8   N2
  cod00 (DRV)
  ▷ x   1393
  y  500;
```

◀▶ : Perform jog operation, and advance the program to the desired position.

GO : Change the program.

9) Move the cursor to the Y-axis address data. Perform jog operation.

```
T S10  N2
  cod00 (DRV)
  x 1393
  ▶ y  500;
```

↓



10) Stop the program in the location for positioning. Update the program.

<pre> T S10 N2 cod00 (DRV) x 1393 ▷ y 2501 </pre>	<div style="display: flex; justify-content: center; align-items: center; gap: 10px;"> <div style="border: 1px solid black; padding: 5px; display: flex; align-items: center; justify-content: center;">◀</div> <div style="border: 1px solid black; padding: 5px; display: flex; align-items: center; justify-content: center;">↔</div> <div style="border: 1px solid black; padding: 5px; display: flex; align-items: center; justify-content: center;">▶</div> </div> <div style="margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; display: flex; align-items: center; justify-content: center;"> GO : </div> </div>
---	--

11) Issue a start command. Start execution from the command just after the teaching operation is complete.

<pre> T O0 N3 cod29 (SETR) x + 1393 y + 2501; </pre>	<div style="border: 1px solid black; padding: 5px; display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 2px;">NOP</div> <div style="font-size: 2em; margin: 0 5px;">:</div> <div style="border: 1px solid black; padding: 2px;">4</div> </div> <p style="margin-top: 5px;">: A start command is given, and the monitor screen is displayed at the same time.</p>
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12) When you would like to reperform another teaching operation, repeat steps 6 through 11.

Note:

The motor can be stopped by pressing the r
■3 or Oy/N
■7 key. However, the teaching screen cannot be displayed even if the CLEAR or STEP key is pressed.

1.3.4 Limitation of Function in Automatic Mode Teaching

In the conventional version, the absolute mode or the incremental mode can be selected. In automatic mode teaching, the absolute mode is automatically set.



2. Addition of Transfer Function in Off-line Mode



Applicable Units and Versions

The transfer function is added in the following units and versions.

- FX-10GM: From the first product
- FX-20GM: From the first product
- E-20TP-E: Ver. 1.20 and later

2.1 Description

In **TP↔GM** of **Other** in **off-line Mode** in the E-20TP, a new function is added so that programs and parameters are written to and read from a positioning unit separately.

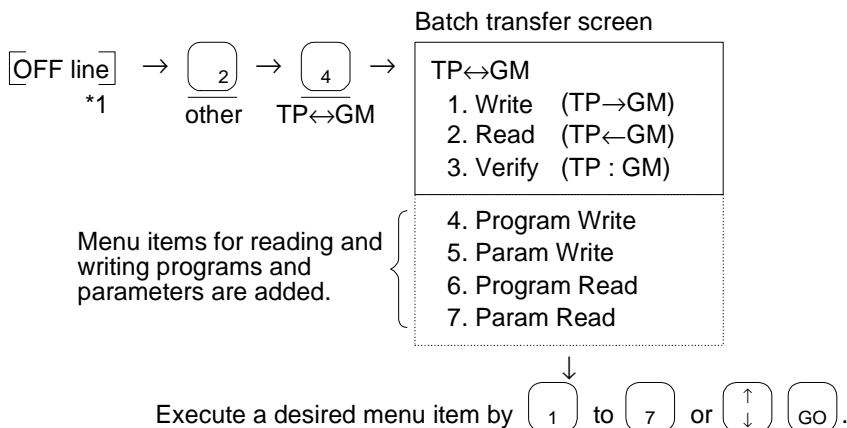
In the conventional version, system setting parameters, positioning parameters, I/O setting parameters, programs and file registers were batch-transferred at the same time. In the new version, they are classified into two groups and each group can be transferred separately.

Table 2.1 : Transfer Group and target items

Group	Transfer target items
Parameter	1) Positioning parameters 2) I/O setting parameters
Program	1) System setting parameters 2) Programs 3) File registers (exclusively when they are assigned by system setting parameters)

2.2 Operating Procedure

Select the transfer function using the following procedure.



*1 Refer to Section 7.1 and 7.2 of E-20TP OPERATION MANUAL (JY992D44901A)